REMARKS

Claims 1 and 8 have been amended and claim 3 has been cancelled. Claims 1, 2 and 4-9 are now pending in the application.

Claim 1 has been amended to clarify the features of the invention, specifically, that the conductor pattern includes a bottom surface (310) entirely contacting the substrate and a pair of flat side surfaces (315, 325). The conductor pattern including a bottom surface (310) entirely contacting the substrate and the pair of flat side surfaces (315, 325) is shown in Figs. 1-4, and is described in the specification on page 7, lines 17-21 and on page 12, lines 24-25.

Claim 8 has been amended to clarify "an upper portion of the conductor pattern." The amendment of claim 8 is supported by the specification on page 7, lines 18-19, page 9, lines 1-4, and is shown in Fig. 1. The conductor pattern (3) includes an upper portion (32) and a lower portion (31), with the upper portion (32) including a top surface (320) and upper side surfaces (315, 325). The top surface (320) and upper side surfaces (315, 325), are exposed by laser irradiation.

Drawing Objection

The drawings are objected to under 37 C.F.R. § 1.83(a) as failing to show every feature of the invention as specified in the claims. In particular, the pair of side surfaces being concave surfaces is not shown in the drawings. Claim 3, reciting that the pair of side surfaces are concave, has been cancelled. Therefore, the objection to the drawings should be withdrawn.

Claim Rejections under 35 U.S.C. §102(b)

Claims 1, 3, 4 and 7 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5, 656, 550 to Tsuji et al. The Applicants respectfully submit that the "conductor pattern" of the present invention differs from that of the Tsuji patent.

As shown in Fig. 1, the printed circuit board of the present invention has a conductor pattern (3) that includes a bottom surface (310) entirely contacting the substrate (2) and a pair of flat side surfaces (315, 325).

The Tsuji patent discloses in Fig. 19A, a printed circuit board having a conductor pattern (28A) formed on a substrate (51b). However, the bottom surface of the conductor pattern (28A) only partially contacts the substrate. It does not entirely contact the substrate. Therefore, the Tsuji patent differs from the present invention.

In addition, as shown in Fig. 19B of the Tsuji patent, the conductor pattern (28A) is a cylindrical pole having a curved side surface. In contrast, the conductor pattern (3) of the present invention extends perpendicular to the plane of the drawing (page 7, line 17-18) and has a pair of flat side surfaces (315, 325). Therefore, the Tsuji patent differs from the present invention.

Claim 3 has been canceled and claims 4 and 7 are dependent claims dependent upon independent claim 1, and thus should be allowable for the above reasons as well as for the additional elements they contain. Applicants now believe that amended claim 1 defines patentable subject matter, and respectfully requests that the rejection of claims 1, 4 and 7 under 35 U.S.C. §102(b) be withdrawn.

Claim 8 has been rejected under 35 U.S.C. §102(b) as being anticipated by Japanese publication no. JP1-175729 to Miyazaki. The method of amended claim 8 includes the step of removing part of the protection film to expose the top surface (320) and part of each of the side surfaces (315, 325), as shown in Fig. 2C.

The Miyazaki reference shows a process for producing a semiconductor device in Figs. 1(a)-1(f). As shown in Fig. 1(f), a gold plating layer (6', 7) and a Ti-Pt layer (3) are formed on a substrate (1) via an insulative film (2). An inter layer insulative film (8) entirely covers the side surfaces of the gold plating layer (7). Therefore, the top surface and a part of each of the side surfaces are not exposed. Therefore, the Miyazaki reference differs from the present invention. Applicants now believe that amended claim 8 defines patentable subject matter, and respectfully requests that the rejection of claim 8 under 35 U.S.C. §102(b) be withdrawn.

Claim Rejections under 35 U.S.C. §103(a)

Claim 2 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsuji et al., in view of Dalal et al. Claim 2 is a dependent claim dependent upon independent claim 1, and thus should be allowable for the above reasons as well as for the additional elements it contains.

Claims 5 and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsuji et al., in view of Kimiya Claims 5 and 6 are dependent claims dependent upon independent claim 1, and thus should be allowable for the above reasons as well as for the additional elements they contain.

Claim 9 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazaki in view of Japanese Publication No. 03153049. Claim 9 is a dependent claim dependent upon

independent claim 8, and thus should be allowable for the above reasons as well as for the additional elements it contains.

Applicants respectfully requests that the rejection of claims 2, 5, 6 and 9 under 35 U.S.C. §103(a) be withdrawn, and claims 1, 2, and 4-9 be allowed.

In view of the amendments and remarks presented above, the Applicant believes that the application is now in condition for allowance, and requests reconsideration of the application and withdrawal of the objections and rejections. The Applicant respectfully requests that the Examiner telephone the undersigned in the event a telephone conference would expedite prosecution of the application.

Respectfully submitted,

GODFREY & KAHN, S.C.

Dated: 08/23/2002

By: William K. Baxter

William K. Baxter
Reg. No. 41,606

Attorneys of Record for the Applicant
GODFREY & KAHN, S.C.
780 North Water Street
Milwaukee, WI 53202-3590
Telephone: 414-273-3500
Facsimile: 414-273-5198
Email: wbaxter@gklaw.com

MW638906_1.DOC

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

In accordance with 37 C.F.R. § 1.121(c)(1)(ii), the following is a marked-up version of the amended claims.

1. (Twice Amended) A printed circuit board comprising:

an insulative substrate;

a conductor pattern formed on the substrate; and

a protection film coating the substrate and the conductor pattern, wherein the conductor pattern includes a bottom surface entirely contacting the substrate, a top surface opposite to the bottom surface, and a pair of flat side surfaces, each of the side surfaces having a lower side surface covered by the protection film and an upper side surface exposed from the protection film, wherein both the bottom surface and the top surface have widths, both the lower side surface covered by the protection film and the conductor pattern have heights, and wherein the width of the bottom surface is greater than the width of the top surface.

Please cancel claim 3.

8. (Twice Amended) A method for fabricating a printed circuit board comprising the steps of:

etching an insulative substrate including a conductor to form a conductor pattern having a bottom surface entirely contacting the substrate, a top surface opposite to the bottom surface, and a pair of side surfaces, wherein the conductor pattern is formed so that a width of [a] the bottom surface [contacting the substrate] is greater than a width of [a] the top surface [, which is opposite the bottom surface];

applying an insulative protection film to the conductor pattern and the substrate; and

removing part of the protection film to expose [an upper portion of the conductor pattern] the top surface and a part of each of the side surfaces.

MW638906_1.DOC